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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,989	02/09/2004	My N. Nguyen	JM35978 (CIP2) DIV - 4962	1282
7590 11/03/2004			EXAMINER	
Bingham McCutchen LLP Three Embarcadero Center San Francisco, CA 94111-4067			VIJAYAKUMAR, KALLAMBELLA M	
			ART UNIT	PAPER NUMBER
			1751	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/775,989

Applicant(s)

NGUYEN, MY N.

Examiner

Kallambella Vijayakumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 41-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 41-46 and 48-64 is/are rejected.
- 7) ☒ Claim(s) 47 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 05/07/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

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**Detailed Action**

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This is a divisional of 09/851,103 filed 05/07/2001, now US patent 6,706,219. Claims 41-64 are pending with the application.

The IDS filed 05/07/2004 has been considered and acknowledged by the examiner.

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***Claim Objections***

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Claims 50, 53 and 55 are objected to because of the following informalities: The claims 50 and 53 depend on the cancelled claims, while the claim wrongly references to 43 comprising a wetting enhancer. Appropriate correction is required. The examiner assumes the Claim 50 to depend on Claim-49, Claim 53 to depend on Claim-52, Claim 55 to depend on Claim-54 for the purposes of the examination. Clarification and/or Appropriate correction is required.

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***Claim Rejections - 35 USC § 102***

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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1. Claims 41-42, 44-46, 59-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuist et al (US Patent 4,118,102).

Kuist et al disclose the compositions of Conductive inks or coatings comprising the blend of Silver Powder (78.13% by wt), GE-RTV-Silicones (16.354% by wt) and propylene glycol (5.21 wt%) that would meet the limitations of the instant claims. The conductive ink would meet the limitation of interface material and silver metallic powder would meet the limitation of a "Solder" in instant claims. *The applicants define the term "Interface Material" to be a paste/film/sheet (Specification, Page-2, Paragraph-3) and the term 'Solder' to be any solder/metal/metallic-compounds (Page-4, paragraphs 1-2).* RTV-Silicone would meet the limitations of a polymer in instant claims 41-42, 44-46 and 59. The weight % of Ag would meet the limitations of instant claims 42, and 60-61 (Col-3, Lines: 51-58; Col-7, Line- 56 – Col-8, Line-11). All the limitations of the instant claims are met.

The reference is anticipatory.

2. Claims 41-42, 44-46, 48-50, and 59-62 are rejected under 35 U.S.C. 102(b) as being anticipated by Shingo et al (JP 09-067518).

Shingo et al disclose the composition of a conductive paste comprising of 60-90 wt% silver powder, 1-20 wt% cyclosiloxane binder, 0.1-100ppm of Pt-vinyl-siloxanes as Pt catalyst, and the additives such as flexibilizer, antifoamer and coupling agent (Abstract, Claims 1-4, Sections: 0004-0011, 0013). The cyclosiloxane binder would meet the limitations of polymer/silicone/siloxanes instant claims 41, 44-46, 48 and 59. The weight % of Ag would meet

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the limitations of instant claims 42, and 60-62. Pt-vinyl-siloxanes would meet the limitations of instant claims 49-50. All the limitations of the instant claims are met.

The reference is anticipatory.

3. Claims 41-46, 48, 51, 57, 59-60, and 63-64 are rejected under 35 U.S.C. 102(b) as anticipated by Ohkawa et al (US Patent # 4,790,968).

Ohkawa et al disclose a silicone based conductive paste (*CP*) containing a dispersion of conductive particles such as *silver*, copper, nickel, platinum, plated noble metal and *carbon* and optionally nonconductive fillers in a preferred polymer matrix of *polyorganosiloxane* (Col-3, Lines: 37-53, 59-60). The silver would meet limitation of solder in instant claim-41. Ohkawa et al further disclose making of a silver-graphite-polyurethane/silicone conductive paste containing about 2.5 parts of carbon and organo-titanium coupling agent that would meet the limitation of claims 43, 51 and 57 (Col: 5-6, Example-1-2; Col-7, Lines: 59-61). Polyorganosiloxane would meet the limitation of silicone resin in claims 41, 44-46, 48 and 59. The sheet would meet the limitations of instant claims 63-64 as layered material (Col-7, Lines 59-62). All the limitations of the instant claims are met.

The reference is anticipatory.

4. Claims 41-46, 48-50, and 57-62 are rejected under 35 U.S.C. 102(b) as obvious over Nguyen (US Patent # 5,852,092).

Nguyen discloses the formulation of conductive paste (*CP*) compositions, which comprise mixtures of organosilicon prepolymers, unsaturated liquid rubber, platinum-containing catalyst

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and thermally or electrically conducting fillers that would meet the limitations of claim 41 (Col-3, Lines 8-10, Table-3). Further, the formulation comprised of an *organo-silicone vehicle* of 40-90 wt% comprising of cyclic olefin and *cyclic siloxane* wherein about 10-60 wt% rubber in liquid form, 20-50 wt% boron nitride or 60-90 wt% *silver particles* or 20-90 wt% boron nitride and silver, 1-5 wt% of *platinum catalyst*, about 2-10 wt% *vinyl silane and carbon fibers* in amounts of at least 0.1 wt %, preferably 0.1-15 wt% depending on the viscosity of the paste desired (Col-1, Lines: 33-59; Col-2, Lines: 12-15, 33-36). The preferred catalysts included Platinum, divinyl, tetramethyldisiloxane in liquid form or dichloro-1, 5-cyclopentadieneplatinate in powder form, and platinum cyclovinylnmethylsiloxane that would meet the limitations of instant claims 50-51 (Col-2, Lines: 50-65). The Vinyl silane meets the limitation of a hydride functional siloxane, vinyl silicone and the crosslinker in claims 44-46, 48 and 59. The carbon fibers would meet the limitation if instant claims 57-58. The compositions in Tables 1-3 (Col-6) would meet the limitations of the listed instant claims. All the limitations of the instant claims are met.

The reference is anticipatory.

5. Claims 41-42, 43-46, 48-49, 51, 56-57, 59-62 are rejected under 35 U.S.C. 102(b) as anticipated Cole et al (US Patent #5,227,093).

Cole et al disclose curable compositions of electrically conductive adhesives and coatings for electrical and electronic devices, comprising about 80 wt% of finely divided spherical and/or elongated *silver particles* coated with fatty acid esters dispersed in an *organosiloxane (A)*, preferably diorganosiloxane with monovalent hydrocarbon alkyl or alkenyl radicals such as

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*vinyl*, allyl located on *terminal silicon* atoms, when high degree of crosslinking that would meet the limitation of instant claims 41, 44-46, 48, and 59. A preferred composition typically included, as a minimum, an organopolysiloxane (ingredient A) containing at least two alkenyl radicals such as vinyl per molecule, as ingredient B an organohydrogenpolysiloxane containing an average of at least two silicon-bonded hydrogen atoms per molecule and *platinum metal or a platinum compound* as the hydrosilylation or curing catalyst and a curing catalyst such as metal salt of a carboxylic acid that would meet the limitation of instant claims 45 and 49, and the composition further included an *organotitanate* that would meet the limitations of instant claims 43 and 51. The conductive fillers included carbon, silver coated on a conductive metals such as copper and aluminum, and non-metallic materials such as glass and organic polymers would meet the limitation of solder in instant claims 41, 56 and 57. Further, additional ingredients to improve the processability of the curable composition or the properties of cured materials prepared from these compositions included reinforcing fillers such as finely divided silica, non-reinforcing fillers, filler treating agents, adhesion promoters, flame retarding agents, heat stabilizers, pigments and dyes would meet the limitations of instant claims 57. The Wt% of silver would meet the limitations of instant claims 42, and 60-62 (Col-1, Lines: 20-25; Col-2: Lines: 25-40; 55-65; Col-3: Lines: 10-13, 25, 35-40, 48; Col-4: Lines: 5 – Col-6, Line: 32). All the limitations of the instant claims are met.

The reference is anticipatory.

6. Claims 41, 43-44, 52-54 are rejected under 35 U.S.C. 102(b) as anticipated by Kang et al (US Patent # 5,837,119).

Kang et al disclose an electrically conductive paste (*ECP*) consisting of indium-coated copper powder (*solder*), polyimide-siloxane (*resin*), solvent (NMP), and carboxylic Acid (*surfactant*), wherein other dendritic powders such as nickel, cobalt, chromium, palladium, platinum, and copper powder coated with a thin layer of low melting point, Pb-free metals, such as *Sn, In, Bi, Sb and their alloys* be used as conductive fillers (Col-4, Lines: 35-55). Kang et al further disclose either a *thermoset or thermoplastic resin* to be a preferred vehicle for the ECP, and silver filled epoxy disposed between electrodes whose *body/film* depicted in Fig-1. Silver-epoxy has been used extensively as a die-bonding material in electronic industry (Col-2, Lines 18-40). The viscosity and thermal impedance properties would be inherent. All the limitations of instant the claims are met.

The reference is anticipatory.

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*Claim Rejections - 35 USC § 103*

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- Claim 55 rejected under 35 U.S.C. 103(a) as being unpatentable over Kang et al (US Patent # 5,837,119).

The disclosure by Kang et al on the formulation of the conductive paste is set forth as in rejection-6 under 35 USC 102 (b).

Kang et al does not disclose the either SnBi or SnAgCu as the specific solder fillers in the conductive paste formulation. However, Kang et al teach that the conductive fillers to include *Sn, In, Bi, Sb and their alloys* in the formulation of ECP.

It would have been obvious to one with ordinary skill in the art to make obvious modifications to the ECP composition of Kang et al by optionally choosing the alloys of Sn such as SnBi to benefit from lead-free solder with improved circuit connection because Kang et suggest the use of the use of Sn/Bi and their alloys, and with the expectation of reasonable success in obviously arriving at the limitations of the instant claims by the applicants.

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#### *Double Patenting*

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The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686

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F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 41, 43, 51 and 63 are rejected under the judicially created doctrine of double patenting over claims 1, 11-12, 18-20 of U. S. Patent No. 6,673,434 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: Both the instant application and the US patent are drawn to almost identical compositions and to interface materials.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application, which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

2. Claims 41 and 56 are rejected under the judicially created doctrine of double patenting over claims 1, 17 and 18 of U. S. Patent No. 6,797,382 since the claims, if allowed, would improperly extend the "right to exclude" already granted in the patent.

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter,

as follows: Both the instant application and the US patent are drawn to almost identical compositions and to interface materials.

3. Claims 41, 43, 56, 63 are provisionally rejected under the judicially created doctrine of double patenting over claims 1, 11-12, 15, 18-19, 20 and 22 of copending Application No. 10/715,719. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: Both the instant application and the listed copending application are drawn to almost identical compositions and to interface materials.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

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*Allowable Subject Matter*

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Claim 47 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:  
The prior art of record neither discloses nor fairly suggestive of the use of Vinyl-Q-Resin in the composition of interface materials.

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*Conclusion*


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on M-Th, 07.00 - 16.30 hrs, Alt. Fri: 07.00-15.30 hrs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMV  
October 30, 2004.

  
Mark Kopec  
Primary Examiner